U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

04-ESQ-0216

SEP 16 2004

04-WTP-215

Mr. J. P. Henschel, Project Director
Bechtel National, Inc.
2435 Stevens Center
Richland, Washington 99352

Dear Mr. Henschel:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF AUTHORIZATION BASIS AMENDMENT REQUEST (ABAR) 24590-WTP-SE-ENS-04-0106, REVISION 0, MODIFICATION OF IMPORTANT TO SAFETY (ITS) SWITCHGEAR BUILDING DESIGN

Reference: BNI letter from J. P. Henschel to R. J. Schepens, ORP, "Transmittal for Approval: Authorization Basis Amendment Request 24590-WTP-SE-ENS-04-0106, Revision 0, Modification of ITS Switchgear Building Design," CCN: 093521, dated August 24, 2004.

This letter approves the subject ABAR that Bechtel National, Inc., (BNI) provided to the U.S. Department of Energy, Office of River Protection (ORP) in the Reference letter. The ABAR proposed to modify the ITS switchgear facility design from the existing one building facility housing both trains of the emergency electric power system to two separate buildings each housing one of the two trains.

ORP's review of the changes proposed in the subject ABAR and of the changes to the Preliminary Safety Analysis Report (PSAR) Revision 1, for the Balance of Facility (BOF) is summarized in the attached Safety Evaluation Report (SER). Based upon the information in the Reference letter and the attached SER, the changes are acceptable, and there is reasonable assurance that the health and safety of the public, the workers, and the environment will not be adversely affected by those changes, and that they comply with applicable laws, regulations, and River Protection Project Waste Treatment and Immobilization Plant (WTP) contractual requirements.

The proposed changes to the PSAR were reviewed for consistency with the Safety Requirements Document. The approved proposed changes in this ABAR will ultimately serve to update the PSAR. While the proposed changes to the PSAR were determined to be consistent with the proposed changes as described in the safety evaluation contained in the ABAR, final review of the proposed changes to the PSAR cannot be made until Chapter 2 of the PSAR is available for review. As a result, this SER provides only interim approval of the proposed specific changes to the PSAR. Final review and approval of the detailed PSAR changes will be made at the time of PSAR update when revisions to Chapter 2 are provided.

This amendment is effective immediately and shall be fully implemented within 30 days. If you have any questions, please contact me, or your staff may contact Dr. Walter J. Pasciak, WTP Safety Authorization Basis Team, (509) 373-9189.

Sincerely,

Roy J. Schepens
Manager

WTP:WJP

Attachment

cc w/attach:
M. T. Sautman, DNFSB
J. M. Eller, PAC

Safety Evaluation Report (SER) of Proposed Authorization Basis Amendment Request (ABAR) 24590-WTP-SE-ENS-04-0106, Revision 0 Modification of Important to Safety (ITS) Switchgear Building Design

1.0 INTRODUCTION

The Waste Treatment and Immobilization Plant (WTP) authorization basis is the composite of information provided by Bechtel National, Inc., (the Contractor) in response to radiological, nuclear, and process safety requirements that is the basis on which the U.S. Department of Energy, Office of River Protection (ORP) grants permission to perform regulated activities. The authorization basis includes that information requested by the Contractor for inclusion in the authorization basis and subsequently accepted by the ORP. The authorization basis for the WTP includes the Safety Requirements Document (SRD) and the Preliminary Safety Analysis Reports (PSAR) for the facilities. The SRD contains the approved set of radiological, nuclear and process safety standards and requirements, which if implemented, provide adequate protection for facility workers, the public, and the environment against hazards associated with the operation of the facility and the PSAR contains Contractor's commitments regarding safety features of the WTP facility design. By letter dated August 24, 2004,[1] the Contractor submitted a proposed amendment to the Balance of Facility (BOF) PSAR modifying the description of the configuration of the ITS electrical switchgear facility. This SER documents the ORP evaluation of the proposed changes in the ABAR.

2.0 BACKGROUND

SRD Safety Criterion 4.4-4 identifies the requirements for the electric power systems required for proper functioning of systems designated as safety design class (SDC). Safety Criterion 4.4-4 states:

> "An onsite electric power system and an offsite electric power system shall be provided to permit functioning of systems designated as Safety Design Class. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to ensure Safety Design Class functions are maintained in the event of postulated accidents. Onsite electric power systems shall be provided to permit functioning of SDC systems that require electrical power to perform their safety functions during loss of offsite power as determined by the accident analysis. The onsite power systems shall include sufficient independence, redundancy, and testability to ensure that the safety function can be performed under postulated accident conditions, including a single failure if postulated. Physical and electrical separation shall be provided between diverse or redundant SDC electrical systems."

[1] BNI letter from J. P. Henschel to R. J. Schepens, ORP, "Transmittal for Approval - Authorization Basis Amendment Request 24590-WTP-SE-ENS-04-0106, Revision 0, Modification of ITS Switchgear Building Design," dated August 24, 2004.

In conformance with this safety criterion, the WTP design provides for an onsite emergency electrical power system with two separate trains designated "A" and "B" trains, each of which will permit functioning of SDC equipment assuming that the other train is disabled by a postulated accident. In order to preclude a single fire accident disabling both trains "A" and "B," the two trains, while currently located within a single ITS switchgear building, are separated from each other by a two-hour fire barrier.

3.0 EVALUATION (ACCEPTABLE)

The proposed change splits the ITS switchgear facility into two separate buildings, one for each train of emergency power. The location of the ITS switchgear facility adjacent to the diesel generator building, remains unchanged and therefore, does not change the hazard evaluation. The two buildings comprising the ITS switchgear facility would be physically separated sufficiently to prevent a fire or other hazard affecting one train also affecting the other train. The seismic design of the facility remains unchanged; i.e., the ITS concrete foundation and embedments used to support SDC equipment, and the facility superstructure are designed to SC-I requirements for earthquakes. The requirement for seismic qualification of emergency power electrical ductbanks as SC-II remains unchanged.

The change does not adversely affect conformance to the Safety Criterion 4.4-4 but rather, enhances physical separation of the ITS trains for protection against common cause hazards. The basic layout of each train within the new buildings remains very similar to the old layout except for some minor incidental changes. Such changes as a result of the split include providing a water heater for each emergency eyewash/shower instead of a shared heater, an outdoor sump for each building, and a separate fire water riser for each building. Although not a result of splitting the building, the roll-up doors into the switchgear rooms would be changed to double doors to make the doors easier to qualify for wind missile protection. Commitment to the standards identified in the SRD Safety Criterion 4.4-4 would remain unchanged.

Based on the foregoing discussion, this proposed change is not a reduction in commitments and would not adversely affect the health and safety of the worker, the collocated worker, or the public. Therefore, the change is acceptable.

4.0 REVIEW OF PROPOSED CHANGES TO PSAR, BOF SPECIFIC INFORMATION

In Sections 3, 4, and 5 of the PSAR BOF-specific information, any reference to "ITS Switchgear Building" would be replaced with "ITS Switchgear Buildings" or "ITS Switchgear Facility."

Additional minor editorial type changes would also be made throughout Sections 3, 4, and 5 in order to make sentence structure consistent with the changes identified above. For example, a reference to "ITS switchgear structure" is changed to "ITS switchgear structures," a reference to "the ITS switchgear building" is changed to "each ITS switchgear building," etc.

In addition to the general changes stated above, the following specific changes to the BOF PSAR are also included in the ABAR:

The second sentence of the first paragraph in Section 3.3.3.4 would be changed from "It contains the two trains of ITS switchgear equipment..." to "It consists of two buildings, each containing one train of ITS switchgear equipment..."

The first and second sentences in the fourth paragraph of Section 3.3.3.4 would be changed as follows:

The PSAR currently states:

"The temperature within the ITS building will be monitored and controlled to ensure that the ITS electrical equipment (switchgear, batteries, etc.) is maintained within their design operating range. One heating and cooling system will be dedicated to each physically separated fire area."

The ABAR proposes to modify it as follows:

"The temperature within the ITS switchgear buildings will be monitored and controlled to ensure that the ITS electrical equipment (switchgear, batteries, etc.) is maintained within their design operating range. One heating and cooling system will be dedicated to each building."

The first and second sentences in Section 4.3.3.4 would be changed as follows:

The PSAR currently states:

"The ITS UPS will be housed in a structure (ITS switchgear facility) that is designed to support the SC-I requirements for the ITS equipment. The heating, ventilation and air conditioning (HVAC) system will be provided to maintain the temperature in the building within the specified operating range for the UPS equipment."

The ABAR would modify it as follows:

"The ITS UPS will be housed in structures (ITS switchgear facility) that are designed to support the SC-I requirements for the ITS equipment. The heating, ventilation and air conditioning (HVAC) systems will be provided to maintain the temperature in the buildings within the specified operating range for the UPS equipment."

The second sentence in Section 4.3.8.4 would be changed as follows:

> The PSAR currently states:
>
> "Each train of the ITS switchgear will be separated and have a dedicated heating/cooling system so that the loss of one system will not impact the other ITS switchgear train."
>
> The ABAR would modify it as follows:
>
> "Each train of the ITS switchgear will be located in a separate building and have a dedicated heating/cooling system so that the loss of one system will not impact the other ITS switchgear train."

References to "HVAC system" would also be changed to "HVAC systems" in other parts of Sections 4 and 5, in line with the proposed change that provides a separate HVAC system of each of the two ITS switchgear buildings as stated above.

In table 5A-2 "Passive Design Features," the required design feature "Fire barrier walls between ITS Switchgear Trains" would be changed to "Physical separation between ITS switchgear." The corresponding Performance Requirement would be changed from "Fire barriers qualified to NFPA requirements" to "Two buildings separated by distance to preclude a fire propagation between the two ITS switchgear trains."

Evaluation (acceptable): These changes are consistent with the proposed change evaluated in Section 3.0 above. The changes are provided is in the form of specific markup of the pages from the BOF PSAR.

4.0 CONCLUSION

On the basis of the considerations described above, the ORP has concluded there is reasonable assurance that the health and safety of the public, the workers and the environment will not be adversely affected by the changes proposed by ABAR 24590-WTP-ABAR-ENS-04-0106, Revision 0. The proposed changes to the PSAR do not constitute a significant reduction in commitment or effectiveness relative to the design, construction, and operation of the WTP facility. Accordingly, the specific proposed changes to various portion of the PSAR, to be incorporated in the BOF specific portions of the PSAR during the next update of BOF-specific portions of the PSAR, are interim acceptable. Final review of those changes will occur at the time of the PSAR update.